

ABSTRACT OF THE DISCLOSURE

Components of a radio-frequency (RF) apparatus including transceiver circuitry and frequency modification circuitry of a crystal oscillator circuit that generates a
5 reference signal with adjustable frequency may be partitioned in a variety of ways, for example, as one or more separate integrated circuits. The frequency modification circuitry may be implemented as part of a crystal oscillator circuit that includes digitally controlled crystal oscillator (“DCXO”) circuitry and a crystal. The frequency
10 modification circuitry may include at least one variable capacitance device and may be employed to generate a reference signal with adjustable frequency. The adjustable reference signal may be provided to other components of the RF apparatus and/or the RF apparatus may be configured to provide the adjustable reference signal to baseband processor circuitry. Automatic frequency control (AFC) circuitry may be integrated with other components of RF circuitry and may generate frequency control signals for the
15 frequency modification circuitry based on, for example, a signal received from a temperature sensor. Digital-to-analog converter (DAC) circuitry may be integrated with other components of RF circuitry to enable all-digital frequency control communications from baseband processor circuitry to RF circuitry.

20